A. O. SMITH

Dura-Max™

Built tough with maximum efficiency

COPPER HEAT EXCHANGER HYDRONIC BOILERS
Models DB-720 thru 1810

Meets or exceeds ASHRAE/IES 90.1b-1989 (1992 requirements) Standards.

FEATURES

ALL NON-FERROUS WATERWAYS - All heat exchanger waterways are 100% copper and bronze. Heavy duty bronze castings and copper heat exchanger tubes. Immune to thermal shock. Ideal for hydronic applications.

OPTIMUM ENERGY HEAT TRANSFER - Double row integral finned copper heat exchanger provides maximum heat transfer. A. O. Smith's self-baffling staggered tube design, assures up to 82% thermal efficiency.

BRONZE REMOVABLE RETURN BENDS - Easily removable, these allow access and inspection of individual tubes. These bronze return bends offer the optimum protection against corrosion or rust found in cast iron headers.

GASKETLESS WET SECTION - Unique "o" ring design compresses and forms a water tight seal outside and away from the combustion chamber. This isolation allows for years of trouble-free service without gasket leaks.

DURAMAX STAINLESS STEEL BURNERS - Reliable, safe and quiet. Protects against corrosion and deterioration found with aluminized burners. Easy slide out burner tray.

LOW-PROFILE DESIGN - Draft diverter is built-in to provide extra clearances for those tight retrofit applications. Certified by A.G.A./ C.G.A.

AUTOMATIC SAFE CONTROLS - Highest quality controls assure dependable operation, require practically no attention. Safety shutoff of pilot and main burners in the event of pilot failure.

INTERMITTENT IGNITION - Standard on all Dura-Max.

COMPACT DESIGN - This rugged unit incorporates a clean, compact jacket design. Allows for easy access and disassembly. Cool to the touch. Approved for combustible floor installations. Gas train is enclosed inside the cabinet.

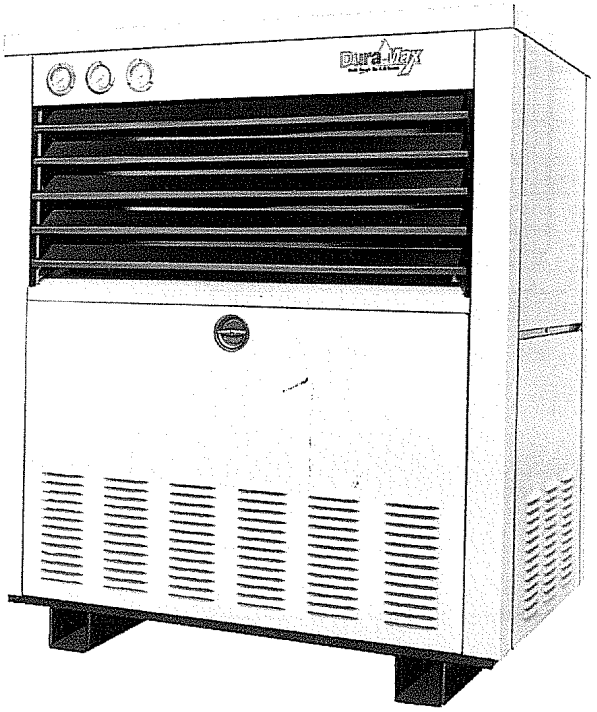
OTHER FEATURES

• Manual reset high limit • ASME rated pressure relief valve 50# (345 kPa) • Factory installed safety flow switch • Redundant safety gas valve • On/Off switch with indicator light.

OPTIONS

• Thermal Balancer Pump Delay • Panel mounted inlet/outlet dial thermometers and pressure gauge • Modulation or dual stage firing • Right end gas and/or water connections • Cupro-Nickel Heat Exchanger • Side Wall Vent Kits.

CERTIFICATION - A.G.A., C.G.A., FM, ASME 160 psi (1100 kPa).



DESIGN AMERICAN GAS ASSOCIATION CERTIFIED

CANADIAN GAS ASSOCIATION APPROVED

FM APPROVED

H

LIMITED WARRANTY OUTLINE

If the heat exchanger should fail within 10 years, under the terms of the warranty, A. O. Smith will furnish a replacement part; installation, labor, handling and local delivery extra. **THIS OUTLINE IS NOT A WARRANTY.** For complete information, consult the written warranty or A. O. Smith Water Products Company.

Warranty does not apply to product installed outside of the United States of America or its territorial possessions and Canada.

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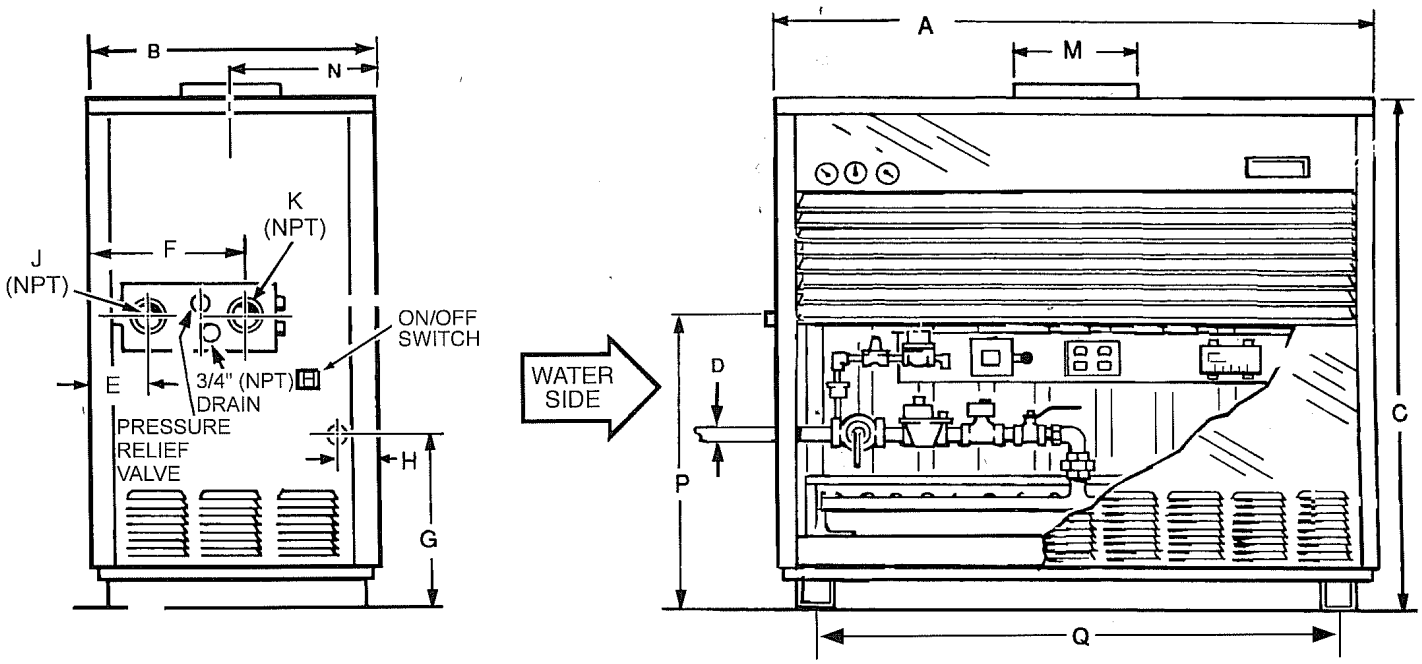

Minimum Clearances To Combustibles In Inches (MM)						
	Top	Water Side	Blank Side	Rear	Vent	Front
All Models	12" (305)	12" (305)	6" (152)	6" (152)	6" (152)	Alcove

Additional clearances for service is recommended.

ALL DIMENSIONS IN INCHES (MM)

Model	Width A	Depth B	Cabinet Height C	Gas Inlet D	Water Inlet E	Water Outlet F	Height To Gas Inlet G	Depth To Gas Inlet H	Water Inlet/Outlet J	Pressure Relief L	Flue Size M	Depth To Flue Center N	Height To Inlet/Outlet P	Leg Width Q	Approx. Ship. Weight
DB-720	46 1/2 (1184)	29 5/8 (752)	54 3/4 (1391)	1 1/4 (32)	7 3/4 (197)	15 1/2 (394)	17 1/4 (438)	4 1/4 (108)	2 (51)	1 (25)	12 (305)	15 1/2 (394)	32 1/2 (826)	34 1/2 (876)	780 (354)
DB-840	52 3/16 (1326)	29 5/8 (752)	54 3/4 (1391)	1 1/4 (32)	7 3/4 (197)	15 1/2 (394)	17 1/4 (438)	4 1/4 (108)	2 (51)	1 (25)	14 (356)	16 1/2 (419)	32 1/2 (826)	40 3/16 (1021)	950 (431)
DB-960	57 3/4 (1467)	29 5/8 (752)	54 3/4 (1391)	1 1/4 (32)	7 3/4 (197)	15 1/2 (394)	17 1/4 (438)	4 1/4 (108)	2 (51)	1 (25)	14 (356)	16 1/2 (419)	32 1/2 (826)	42 3/4 (1086)	950 (431)
DB-1080	52 7/8 (1343)	32 3/4 (832)	58 (1473)	1 1/4 (32)	7 1/2 (191)	18 1/2 (470)	18 9/16 (472)	4 (102)	2 1/2 (64)	1 1/4 (32)	16 (406)	17 1/4 (438)	30 15/16 (786)	40 7/8 (1038)	1,000 (454)
DB-1210	58 1/2 (1486)	32 3/4 (832)	58 (1473)	1 1/2 (38)	7 1/2 (191)	18 1/2 (470)	18 9/16 (472)	4 (102)	2 1/2 (64)	1 1/4 (32)	16 (406)	17 1/4 (438)	30 15/16 (786)	46 1/2 (1181)	1,025 (465)
DB-1350	64 1/2 (1638)	32 3/4 (832)	58 (1473)	1 1/2 (38)	7 1/2 (191)	18 1/2 (470)	18 9/16 (472)	4 (102)	2 1/2 (64)	1 1/4 (32)	18 (457)	17 1/4 (438)	30 15/16 (786)	52 1/2 (1333)	1,100 (499)
DB-1480	69 1/2 (1765)	34 (864)	60 1/2 (1537)	1 1/2 (38)	7 1/2 (191)	18 1/2 (470)	19 1/8 (486)	4 1/2 (114)	2 1/2 (64)	1 1/4 (32)	18 (457)	13 3/4 (349)	31 (787)	57 1/2 (1461)	1,125 (510)
DB-1610	75 (1905)	34 (864)	60 1/2 (1537)	2 (51)	7 1/2 (191)	18 1/2 (470)	19 1/8 (486)	4 1/2 (114)	2 1/2 (64)	1 1/4 (32)	18 (457)	13 3/4 (349)	31 (787)	63 (1600)	1,150 (522)
DB-1810	82 1/2 (2095)	34 (864)	60 1/2 (1537)	2 (51)	7 1/2 (191)	18 1/2 (470)	19 1/8 (486)	4 1/2 (114)	2 1/2 (64)	1 1/4 (32)	20 (508)	13 3/4 (349)	31 (787)	70 1/2 (1791)	1,250 (567)

Gas supply pressure 13.8" w.c. maximum, 5.5" w.c. minimum. Natural gas only. Electrical requirements - 120 VAC; 15 Amps.

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BOILER RATE OF FLOW AND PRESSURE DROP

Model Number	Temp. Rise 20°F		Temp. Rise 30°F		Temp. Rise 40°F		Temp. Rise 10°C		Temp. Rise 15°C		Temp. Rise 20°C		Model Number
	Head Flow (gpm)	Head Loss (Feet)	Flow (gpm)	Head Loss (Feet)	Flow (gpm)	Head Loss (Feet)	Flow (lps)	Head Loss (meters)	Flow (lps)	Head Loss (meters)	Flow (lps)	Head Loss (meters)	
720	59	3.5	40	1.7	30	1.0	4.2	1.16	2.8	0.56	2.1	0.36	720
840	69	4.8	46	2.1	35	1.5	4.9	1.89	3.2	0.76	2.4	0.58	840
960	79	6.8	53	3.3	40	1.9	5.6	2.42	3.7	1.15	2.8	0.69	960
1080	89	4.5	59	2.1	45	1.4	6.2	1.62	4.2	0.81	3.1	0.51	1080
1210	100	5.3	67	2.7	50	1.6	7.0	1.96	4.7	0.98	3.5	0.64	1210
1350	111	6.8	74	3.2	56	1.8	7.8	2.35	5.2	1.26	3.9	0.73	1350
1480	122	7.9	81	3.9	61	2.1	8.6	2.91	5.7	1.49	4.3	0.84	1480
1610	133	9.5	89	5.0	66	3.0	9.3	3.55	6.2	1.85	4.7	1.10	1610
1810	149	12.0	100	6.2	75	3.9	10.5	4.19	7.0	2.21	5.2	1.35	1810

NOTE: Pressure drop shown is the loss through the boiler only and does not include any additional piping.

SUGGESTED SPECIFICATIONS

Hydronic boiler shall be A. O. Smith Dura-Max model DB with an input rating of BTU/Hr (KW) and having an output rating of BTU/Hr (KW). The boiler shall be design certified by the American and Canadian Gas Associations and shall carry the ASME "H" Symbol. The wet section shall be design registered in accordance with the requirements of the ASME Code and shall carry an appropriate National Board Number or Canadian Registration Number. All internal waterways shall be copper, brass or bronze. The heat exchanger shall be a two (2) pass design incorporating integral fin copper tubes. The double row heat exchanger shall have staggered tubes. Cast bronze return bends shall be readily removable to permit visual inspection or cleaning without removing the entire wet section assembly. Silicone "O" ring gaskets shall form a water tight seal by compression and shall be isolated from the flue gasses by 3/4" (2cm) board type ceramic fiber insulation. The heat exchanger assembly shall be hydrostatically tested to a pressure of 240 psi (1655 kPa) and shall have a maximum working pressure of 160 psi (1100 kPa).

The Combustion Chamber shall be constructed of board type ceramic fiber insulation rated to 2300°F (1260°C) which interlock to form a gas tight seal and shall be supported in a heavy gauge corrugated steel frame. The external cabinet shall incorporate a built-in draft hood and shall be of baked enamel steel construction. It shall be suitable for installation on combustible flooring. The burners shall be a stainless steel stamped design and shall be mounted in a removable drawer assembly.

The burner controls shall be 24 VAC and shall include slow opening main gas valve for soft ignition, redundant safety shutoff gas valve, main and pilot pressure regulators, recycling intermittent pilot system with one second shutdown in the event of pilot flame failure, automatic recycling high limit, manual reset ECO limit, main and pilot manual cocks, manual firing valve, an ASME rated pressure relief valve and factory installed flow switch.

The boiler shall comply with the latest edition of ASHRAE/IES 90.1b-1989 (1992 requirements) Standards. Optional: Factory installed dial-type temperature and pressure gauges shall be mounted on the front of the cabinet.

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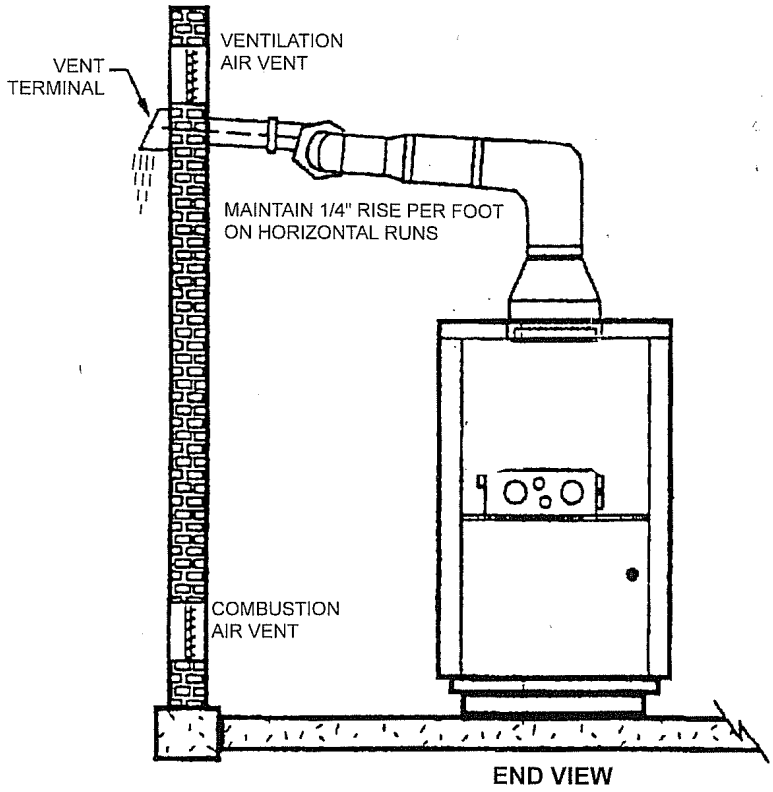
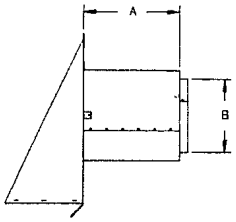
Dura-Max Side Wall Venting



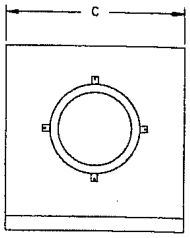
END VIEW

Side Wall Vent Hoods

Part Number	Dimensions in Inches (mm)		
	A	B	C
6526	11-1/2" (290mm)	8" (203mm)	20" (508mm)
6526-1	11-1/2" (290mm)	10" (254mm)	20" (508mm)



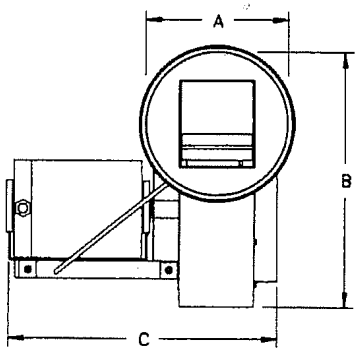
Side View



Rear View

Power Venter Dimensions

Part Number	Dimensions in Inches (mm)		
	A	B	C
6551-1	8" (203mm)	14-3/4" (375mm)	15-1/4" (387 mm)
6551-2	10" (254mm)	18" (457mm)	16-1/2" (419 mm)



	Equivalent Length
Elbow 90 Degree	10' (3m)
Elbow 45 Degree	5' (1.5m)

Dimensions in Inches (Millimeters)

Model	Draft Hood Outlet Size	Power Venter Part #	Side Wall Vent Hood Part #		Vent Pipe Size				
					6" (152mm)	8" (203 mm)	10" (254mm)	12" (305mm)	14" (356mm)
DB-720	12" (305mm)	6551-1	6526	Vent Length (Maximum Equivalent Feet of Pipe)	100' (30.5m)	N/R	N/R	N/R	N/R
DB-840	14" (356mm)	6551-1	6526		80' (24.4m)	100' (30.5m)	N/R	N/R	N/R
DB-960	14" (356mm)	6551-1	6526		50' (15.25m)	100' (30.5m)	N/R	N/R	N/R
DB-1080	16" (406mm)	6551-1	6526		NR	40' (12m)	100' (30.5m)	N/R	N/R
DB-1210	16" (406mm)	6551-2	6526-1		N/R	100' (30.5m)	N/R	N/R	N/R
DB-1350	18" (457mm)	6551-2	6526-1		N/R	100' (30.5m)	N/R	N/R	N/R
DB-1480	18" (457mm)	6551-2	6526-1		N/R	100' (30.5m)	N/R	N/R	N/R
DB-1610	18" (457mm)	6551-2	6526-1		N/R	80' (24.4m)	100' (30.5m)	N/R	N/R
DB-1810	20" (508mm)	6551-2	6526-1		N/R	N/R	30' (9m)	70' (21.3m)	100' (30.5m)

N/R = Not Recommended

A.O. Smith Water Products Co., Inc. On Line
www.hotwater.com

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